



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

pores of the epidermis could not have caused death in so short a time. The closing of the pores and stomata is undoubtedly a secondary cause of death, but only after the lapse of some days. No change was observed similar to that produced by the vapor of boiling water. The scorching action of a high, dry temperature occurs only in the immediate vicinity of the volcano. Neither an acid nor alkaline reaction is shown by any change of color in the flowers or leaves, except a few instances of a change to blue of rose, orange, or violet colored organs, which might be attributed rather to an alkaline than an acid reaction; but these are few and doubtful. Many phenomena concur in pointing to chloride of sodium as the chief agent in the destruction of vegetable tissue. The salt was present in sufficient quantity in the falling ashes to be readily discernible to the sight, and is also met with as an efflorescence in the ashy soil. — A. W. B.

ZOOLOGY.

CALCULI FROM THE STOMACH OF A HORSE.—A singular and interesting collection of so-called “stones” was recently taken from the intestines of a horse in North Ferrisburg, Vermont. I did not see the animal, but am told that the largest calculus had broken through the large intestine, while the rest were lying loose in its cavity. There was in all, as nearly as I can ascertain, about a pint of the calculi, of which the largest and twelve other entire specimens are before me, and fragments of three or four others. Only the largest is regular in form. This is almost perfectly spherical, being nine and a quarter inches in circumference and 2.9453 inches in diameter, and its weight is eleven Troy ounces or 364.45 grammes. The rest are very much smaller and quite irregular in form, little less so than any chance handful of pebbles, and as they are smaller they are less regular. The larger two, excepting the large one just mentioned, though irregular, approach a spherical form with two opposite sides considerably flattened, the circumferences being respectively $2\frac{3}{4}$ inches and $2\frac{5}{8}$ inches in one direction and three inches and $2\frac{7}{8}$ inches in the other, and the diameters .93 and .96 inch for the longer and .63 and .68 inch for the shorter. The rest are all more or less inferior to these in size and approach a pyramidal form, the smallest being most definitely of this form with each side of a different size, the dis-

tance from the apex of each side to the middle of the opposite face being .25 inch, .375 inch and .46 inch. The calculi are, in appearance, not unlike the common clay stones of the Connecticut River Valley though darker in color. They are composed of a series of concentric layers, which are quite a dark brown at the centre, but of lighter shades towards the outside, so that the color and appearance of the fractured surface is quite like the well known "Gibraltar Rock." The layers do not seem to differ in any other respect than depth of color. They are of somewhat variable thickness but for the most part they are from .01 inch to .03 inch and are much more distinct near the exterior than at the centre, where it is with difficulty that they are seen. The surface of all is smooth and polished and of a greenish brown color. The fracture is uneven and glassy. A chemical analysis of several by Mr Collier showed their composition to be somewhat peculiar, as they were found to be a triple phosphate of ammonia and magnesia with a little water and traces of lime and uric acid. All that were broken contained some foreign substance as a nucleus. In two instances this nucleus was a carpet tack, in the others a bit of stone. The specific gravity is 1.724 and the hardness somewhat less than calcite and rather more than selenite. The horse from which these objects were taken was sixteen years old and was sick only twenty-four hours before it died and, until the calculi were discovered, was supposed to have Bots. I am unable to find any mention of calculi as occurring in either stomach or intestines but I am told that similar ones to those described have been found in the stomach of the sheep in more than one instance, and Prof. Collier has handed me a fragment of one, which he says came from the stomach of a cow which when freshly broken has precisely the same appearance as those just described from the horse and is of nearly the same specific gravity, being 1.7049. If the mass, of which this piece is a fragment, was a perfect sphere, it must have been eighteen or nineteen inches in circumference.

The following table gives the dimensions and weight of ten of of the calculi :—

	Longest Diameter inches	Shortest Diameter inches	Weight in grains		Longest Diameter inches	Shortest Diameter inches	Weight in grains
No. 1.	2.94	2.94	5.625	No. 6.	.62	.43	40
" 2.	.96	.68	160	" 7.	.60	.44	30
" 3.	.93	.66	140	" 8.	.51	.32	23
" 4.	.68	.57	55	" 9.	.46	.38	20
" 5.	.63	.40	43	" 10.	.46	.25	15

Balls of hair very compact and smooth are of common occurrence in the stomachs of cattle, but stony concretions seem very rare.— G. H. PERKINS, *Burlington, Vermont*.

ANIMALS OF THE MAMMOTH CAVE.—[Since the account of the Blind fishes of the Mammoth Cave was published in the *NATURALIST* for January, 1872, I have accidentally met with the letter by Prof. B. Silliman, Jr., printed in the *Amer. Jour. of Science*, vol. ii, 2d series 1851, p. 332, giving an account of his visit to the cave in 1850. As there are several points of interest referred to in relation to the animals of the cave which I should have quoted in my article had I known of Prof. Silliman's at the time, I now make the following extract, especially calling attention to the statement relating to the fish *with color and external eyes*, in the hope that further information may be obtained about this otherwise unknown species. Is it the "black fish" of Tellkampf?

The account of the rat found in the cave and incapable of sight when first brought to the light, but afterwards attaining it, is of special interest in connection with the cause of blindness in the animals of the cave, and may be used as an argument that simple disuse of the organ of sight does not necessarily bring about atrophy of the eye, and that we must look to other than external conditions *for the cause* of the non-development of the eyes in many of the animals of the cave.— F. W. P.

"The phenomena of life within the cave are comparatively few but interesting. There are several insects, the largest of which is a sort of cricket with enormously long antennæ. Of this insect numerous specimens will be found among the specimens sent to Prof. Agassiz. There are several species of Coleoptera, mostly burrowing in the nitre earth. There are some small water-insects also which I suppose are Crustacean. Unfortunately, three vials containing numerous specimens of these insects were lost with my valise from the stage coach, and I fear will not be recovered. Of the fish, there are two species, one of which has been described by Dr. Wyman in the '*American Journal of Science*,' and which is entirely eyeless; some ten or twelve specimens of the species were obtained. The second species of fish is not colorless like the first, and it has external eyes, which however are found to be quite blind. The craw-fish or small crustacea inhabiting the rivers with the fish are also eyeless and uncolored, but the larger-eyed and colored craw-fish, which are abundant without the cave, are also common at some seasons in the subterranean rivers, and so also it is said the fish of Green river are to be found in times of flood in the rivers of the cave. Among the collections are some

of the larger-eyed craw-fish which were caught by us in the cave. The only mammal, except the bats, observed in the cave, is a rat which is very abundant, judging from the tracks which they make, but so shy and secluded in their habits that they are seldom seen. We caught two of them, and fortunately male and female. The chief points of difference from the common rat in external characters, are in the color, which is bluish, the feet and belly and throat white, the coat which is of soft *fur* and the tail also thinly furred, while the common or Norway rat is gray or brown, and covered with rough hair. The cave rat is possessed of dark black eyes, of the size of a rabbit's eye and entirely without iris; the feelers also are uncommonly long. We have satisfied ourselves that he is entirely blind when first caught, although his eyes are so large and lustrous. By keeping them, however, in captivity and diffuse light, they gradually appeared to attain some power of vision. They feed on apples and bread, but will not at present touch animal food. There is no evidence that the cave rats ever visit the upper air, and there was no one who could tell me whether they were or were not found there by the persons who first entered this place in 1802. Bats are numerous in the avenues within a mile or two of the mouth of the cave, and Mr. Mantell thinks he has secured at least two species. Several specimens are preserved in alcohol. It was not yet quite late enough in the season when we were at the cave, Oct. 16th—22d, for all the bats to be in winter quarters, as the season was very open and warm. Still, in the galleries where they most abound, we found countless groups of them on the ceilings chipping and scolding for a foothold among each other. On one little patch of not over four by five inches, we counted forty bats, and were satisfied that one hundred and twenty, at least, were able to stand on a surface a foot square; for miles they are found in patches of various sizes, and a cursory glance satisfied us that it is quite safe to estimate them by millions. In these gloomy and silent regions where there is neither change of temperature nor difference of light to warn them of the revolving seasons, how do they know when to seek again the outer air when the winter is over and their long sleep is ended? Surely He who made them has not left them without a law for the government of their lives."

THE OPOSSUM.—This species of marsupial, seems to be widely distributed in every portion of the United States. Its original name in the Choctaw language is "shookhutta"; which signifies that he is the father or rather the originator of all hogs. It is not very swift of foot, neither is it very wild. I have frequently, when hunting in the woods, passed within a few steps of them and they did not seem to regard me. Our turkey buzzards have somehow found it out, and will alight near where they find the

opossum feeding in the woods and running up on him, flap their wings violently over him a few times, when the opossum goes into a spasm, and the buzzards very deliberately proceed to pick out its exposed eyes and generally take a pretty good bite from its neck and shoulders; the opossum lying on its side all the time and grunting. I have twice seen a buzzard do as described, and once I found a poor creature trying to find something to eat with one eye out and one shoulder entirely gone, evidently caused by a buzzard.

They dwell in hollow logs, stumps and in holes at the root of the trees. They do not burrow or prepare dens for themselves, but find such as are ready made. I have seen them carrying into their holes, at the approach of cold weather, considerable bundles of dry leaves rolled up in their tail; they understand the signs of the coming spells of bad weather, and they prepare for it by making for themselves a good warm bed. They do not hibernate, but are found out hunting food in frosty weather. They possess but little caution. Hence they are often found in the poultry houses, chicken coops, smoke houses, and even in our dining rooms, rattling about in search of something to eat. I have often seen their tracks in the roads and paths where they had travelled three or four miles to a farmyard, to which they had no doubt been directed by the crowing of the roosters. They will catch a grown hen and drag her off squalling at the top of her voice and will not abandon her until the dogs which have been aroused by the uproar have overtaken and commenced cracking their bones. They will eat bacon, dry beef, carrion, any kind of fowl, rabbits, any sort of small game, almost all the insects, and fruits of every variety. They voraciously devour the muskmelon, and several species of mushrooms; in short they are nearly omnivorous.

The only case in which it manifests any respectable degree of cautiousness is when it is hunted at night in the forest; on hearing the din and noise of the hunters, it with some difficulty makes shift to climb a small tree or sapling, where, wrapping the naked, rasplike tail around some convenient limb, it quietly awaits the approaching dogs and hunters. By many people the flesh is considered delicious. In Galveston, Texas, in the proper season, a good fat opossum will sell for \$1.50. Its flavor resembles that of the flesh of a young hog, but is sweeter, less gross and is no doubt a more healthy food for man. A dog will starve sooner

than eat the flesh of an opossum; negroes and many other persons are exceedingly fond of it.

During their rutting season, the males are very rampant and belligerent. Numbers will collect around a female and fight like dogs. Twenty or thirty years ago, I witnessed a case myself in the forests of Mississippi. The female was present, there were three males, two of them were fighting, while the third was sitting off a little piece, looking as though he felt as if he had seen enough. They were fighting hard and had been, from the signs in the wallowed down grass, for three or four days. Kicking over the female, who immediately went into a spasm, I made a slight examination of the pouch.

They are exceedingly tenacious of life. I have many times seen the dogs catch them and chew and crack, seemingly, all the bones in the skin, leaving them to all appearances entirely lifeless; and, going out the next morning for the purpose of removing the dead thing, would find that it had left its death bed and putting the dogs on its track trail him a mile or more before overtaking him. He would, to be sure, be found in a bad fix, but at the same time he lacked two or three more bone crackings of being dead. They cannot, like the raccoon, be so far domesticated as to form any attachment for persons or their houses, though I have two or three times found them under the floor of dwelling houses, where they had been for some time and had evidently taken up winter quarters, but they did not remain there long, nor do I think they dwell long at any one place. They swim very well when it is necessary.—GIDEON LINCEUM, *Long Point, Texas.*—*Communicated by the Smithsonian Institution.*

HABITS OF TROPIC BIRDS.—“For our own part, not believing in our queen Moé as implicitly as we ought to have done, we began shooting the tropic birds as they flew over us, but we soon gave it up, for two reasons:—first, that we found that if we got a rocketeer, the chances were ten to one that we cut the scarlet feathers out of his tail; and, secondly, because we discovered that, by diligent peering under the bushes, we might pick up as many live uninjured specimens as we liked. I never saw birds tamer or stupider, which tameness or stupidity may be accounted for by the extreme smallness of their brain, which is really not larger than that of a sparrow. They sat and croaked, and pecked, and bit, but never

attempted to fly away. All you had to do was to take them up, pull the long red feather out of their sterns, and set them adrift again. Queen Moé was right. On Tubai you may pick up tropic birds as easily as a child picks up storm-worn shells on the sea-shore. It was really no small comfort to be able to get specimens of this beautiful bird without betraying their confidence by shooting them from the schooner. Small-brained as they are, they are gifted with an extraordinary amount of inquisitiveness, particularly in the early morning. As we bowl along before the flashing trade-wind, we hear a few harsh screams, and up come a pair of 'bosens' with their bright scarlet tail feathers glowing in the morning sun. They make two or three sweeps around us, evidently comparing notes, and then away into the deep blue, on their own private affairs. They fish generally like the tern, to whom I suspect they are cousins-german; but they have a way sometimes of hovering perpendicularly, with the bill pressed against the breast, that I have never observed but in one other bird, the black-and-white kingfisher of the Nile. When the 'bosen' has sighted his prey in this position, he turns over in the deftest manner, and goes down straight as a gannet, up to his neck, no further, and remounts for a fresh hover. I have never had the good fortune to see the white-tailed phaeton fishing, often as I have looked for him; indeed I have rarely met him out at sea at all. The finest I have seen were hanging about the high cliffs of the Society Islands; and I do not exaggerate when I state that I have seen more than one with a glorious waving white tail feather, two good feet long though the bird itself was not much larger than a black-headed gull. What they do with their tails when they feed passed my comprehension.

Not only did we find full-grown tropic birds, but we found their eggs and young,—the former about the size of a hen's egg, prettily splashed with reddish-brown, laid on the bare sand, under a bush; the latter really handsome creatures, about the size of a herring-gull, beautifully marked with black and white (like a falcon). The bill at this stage of their existence is black, not red. When you find your young friend under a bush, he is ensconced in a small basin of coral-dust, without any nest at all, and his surroundings show him to be a cleanly thing. When you come upon him suddenly, he squalls and croaks and wabbles about, and is as disconcerted as a warm city man when you try to drive a

new idea into him unconnected with money. But he sticks stoutly to his dusty cradle, and never attempts to escape, saying plainly enough, 'My mother told me to stop here till she brought me my supper; and here I am going to stay.'—EARL OF PEMBROKE in *South-Sea Bubbles*, p. 143.—*Ann. and Mag. Nat. Hist.*

GEOGRAPHICAL VARIATION. — At the meeting of the Boston Society of Natural History on June 19, Mr. J. A. Allen made some further remarks on "Geographical Variation in North American Birds," a subject to which he had called the attention of the Society at a previous meeting, at which he exhibited specimens illustrating the general facts of geographical variation. He briefly referred to the smaller size, generally darker colors, larger beaks, longer claws and longer tails characterizing, as a general rule, individuals of the same species living at the southern borders of their respective habitats as compared with those living further northward, and the paler tints of those inhabiting the arid portions of the interior of the continent, as compared with those of the moister adjoining districts. He alluded to the changes of nomenclature that must naturally result from the now known intergradation of forms formerly regarded as specifically differentiated, such intergradation showing them to be geographical races and not species; and called attention to the coincidence of the occurrence of the brighter colored birds, not only as respects the avian class as a whole, but in respect to families and genera, within the tropical and subtropical regions, and also the occurrence within the same regions of all forms in which the bill or tail was remarkably developed; and finally passed to a consideration of the bearing of the general facts of geographical variation upon the question of the genesis of species. While admitting the laws of so-called natural and sexual selection to be potent influences in the differentiation of animals, he thought that they were secondary rather than primary agencies, and that the conditions of environment, and especially those of a geographical or climatic character, exercised a greater influence than evolutionists were generally willing to admit, and also that the "laws of acceleration and retardation," as shown by Professors Hyatt and Cope, were necessary to explain a certain class of phenomena presented by "modification by descent."

Although some of the modifications of color were undoubtedly

“protective,” — the paler tints developed in dry regions better harmonizing with the pale gray tints of the vegetation at such localities, — yet the transition was as gradual over the intervening districts as were the climatic changes themselves over the same areas; while it was claimed that evidence of the direct influence of dry heated winds upon color was abundant; and that the gradual transition between diverse forms was so uniform and general that it pointed to constant and general laws of geographical variation. When the known transitional stages between formerly supposed specific forms were exceptional, it was more or less common to regard them as the result of hybridization, but the gradual, almost imperceptible, stages of transition between well-marked forms differently situated in respect to latitude rendered such a theory now highly untenable, and scarcely more probable as applied to intergrading forms occupying localities widely separated in respect to longitude. In regard to species as distinguished from varieties, it was deemed proper to regard as *species* such groups of individuals as did not at present intergrade, and as *varieties* such groups of individuals, though more or less diverse in their extreme phases, as were found to thoroughly intergrade, — which, he remarked, is only what many and probably the majority of naturalists are practically doing.

NOTE ON THE THREAD WORM (*Filaria anhingæ*) FOUND IN THE BRAIN OF THE SNAKE BIRD. — An account of this remarkable parasite was given in the “Proceedings of the Boston Society of Natural History” Oct. 7th, 1868, showing that it was present in seventeen out of nineteen birds examined, and always found in the same place, viz., the space between the cerebral lobes and the cerebellum. It was also shown that these worms are viviparous, their oviducts containing eggs in all stages of development from the egg just formed to the mature embryo. In the lower portions of the oviduct the young were hatched and ready for exclusion.

During the last winter, when in Florida, I had an opportunity, through the kindness of my friend G. A. Peabody, Esq., of examining ten additional birds. The proportion of the infected ones was less than in the previous examinations, no worms being found in four. Two of these were not mature birds, but of the age of the other two I have no record. Of the six in which worms were found, four had both male and female *Filariae*, while two had only

females, viz., one had one and the other three. In the instances where both sexes were present, the eggs were found, as before, in various stages of development, while in the others, where females only existed, the oviducts were full of eggs and in the same numbers as in the others, but there were no signs of impregnation and consequently no developmental changes.

From these facts it seems almost certain that impregnation takes place in the head, and, unless both sexes are present there, the brood fails. It is also probable, on the supposition that these worms are migratory, that it is in the head of the Anhinga the sexual organs are developed, the young arriving there in an immature state.

Every attempt to find traces of this worm in other parts of the body, or even of the brain failed. — J. WYMAN.

VIVIPAROUS MINNOWS.—Specimens of a species of *Pœcilia*, found in some brackish lakes in the interior of the Island of New Providence, Bahamas, have been kept in an aquarium for the last three years. When first obtained they were about an inch long. The female grows in confinement to about double that length, and the male to something less, but is not one-half the bulk of his mate; both are semi-transparent and the backbone is clearly visible. The anal fin of the male consists principally of a long spine. In its normal position this spine lies close under the body and reaches backward nearly to the commencement of the caudal fin, and is evidently the intromittent organ. It is furnished with a hinge joint and is capable of being thrown forward at an acute angle, being also susceptible of a slight lateral movement. The act of copulation takes place by the male rising perpendicularly under and a little to one side of the female and making a dart at her with the spine, which is brought laterally forward at the instant of connection. The act is almost momentary and is hardly noticeable without the closest attention. Two of the females gave signs of being with young, and one morning a small fish about one-third of an inch long was discovered, but it was evident the rest had been devoured by the males, for on a subsequent occasion when a female again became gravid the males were all removed and on the next day the gravid fish had nine young, all born alive; these were placed together with the above mentioned *one* in a finger basin; they were perfect fish, and had no appearance of the yolk being attached, as is

the case with other fish. The day after their birth they ate raw beef shred very small. These ten fish are now nearly six months old and are all females; the two old ones have each had young since; one had three alive and four dead, the other four alive and four dead; neither of these latter broods lived over a month and were unable up to the time of their death to rise from the bottom of the aquarium. Between the birth of each litter there was a period of about ten weeks. Those which are alive are all females and the succeeding litters were to all appearances males. It will be a curious circumstance, and a subject for future investigation, should every alternate litter prove to be of an opposite sex to the preceding one. No fish have yet been bred from those born in the aquarium and therefore it is not known at what age they begin to reproduce.

C. FITZ GERALD. — *Lieut. H. M., 1st W. India Regt., Nassau, Bahamas, March 11th, 1864.* — *Communicated by the Smithsonian Institution.*

MICROSCOPY.

PHOTO-MECHANICAL PRINTING. — Incidentally to a pathological report to the Surgeon General, Dr. J. J. Woodward calls attention to the familiar disadvantages of the usual means of representing in publications the magnified appearance of microscopic objects by etchings, lithographs and woodcuts. All such hand work is laborious and wasteful of time if done by the investigator, and liable to omit the most important points if intrusted to another artist. Even the microscopist himself, being unable to represent all that he sees, is obliged to select what he conceives to be of importance, and thus represents his own theories rather than severe facts. [If, however, his theories are correct, and his delineation skilful, this very power of selection and construction enables him to give a distinctness and completeness which is lacked by the photographic camera.] The advantage of truthfulness is on the side of photo-micrography, but silver prints are expensive, inconvenient, and not permanent, and the reproduction of the negatives in permanent inks is greatly desired. Two such methods are now successfully used in the United States.

By the Woodbury method a relief surface of gelatine is produced from the negative by the action of light, and from this a metal "intaglio" is produced by pressure. In this a series of suitably colored gelatine films, which constitute the prints, are formed by